



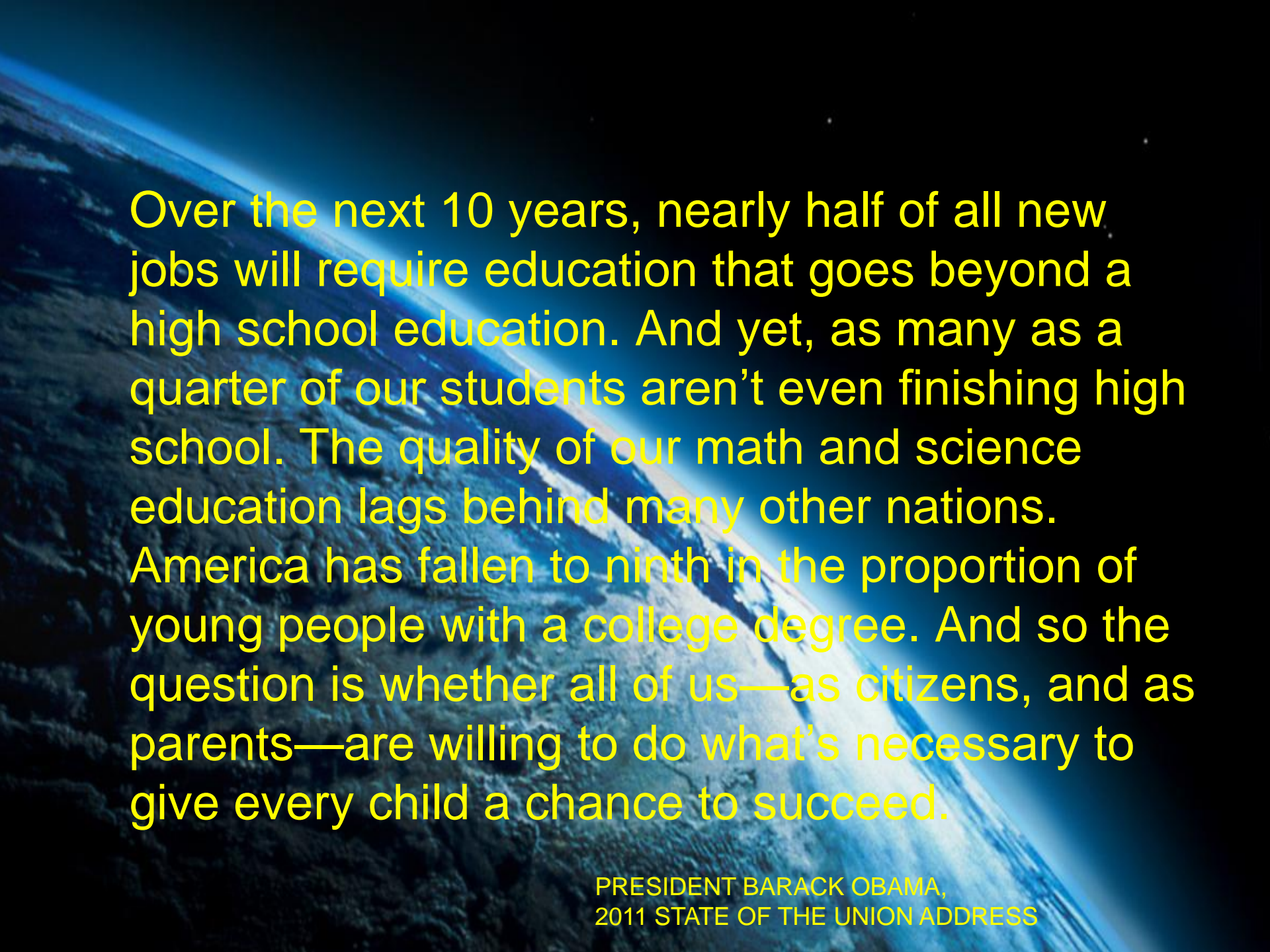
NASA Education

Current Activities and Plans

Education and Public Outreach Committee



Leland D. Melvin
NASA Associate Administrator for Education



Over the next 10 years, nearly half of all new jobs will require education that goes beyond a high school education. And yet, as many as a quarter of our students aren't even finishing high school. The quality of our math and science education lags behind many other nations. America has fallen to ninth in the proportion of young people with a college degree. And so the question is whether all of us—as citizens, and as parents—are willing to do what's necessary to give every child a chance to succeed.

PRESIDENT BARACK OBAMA,
2011 STATE OF THE UNION ADDRESS



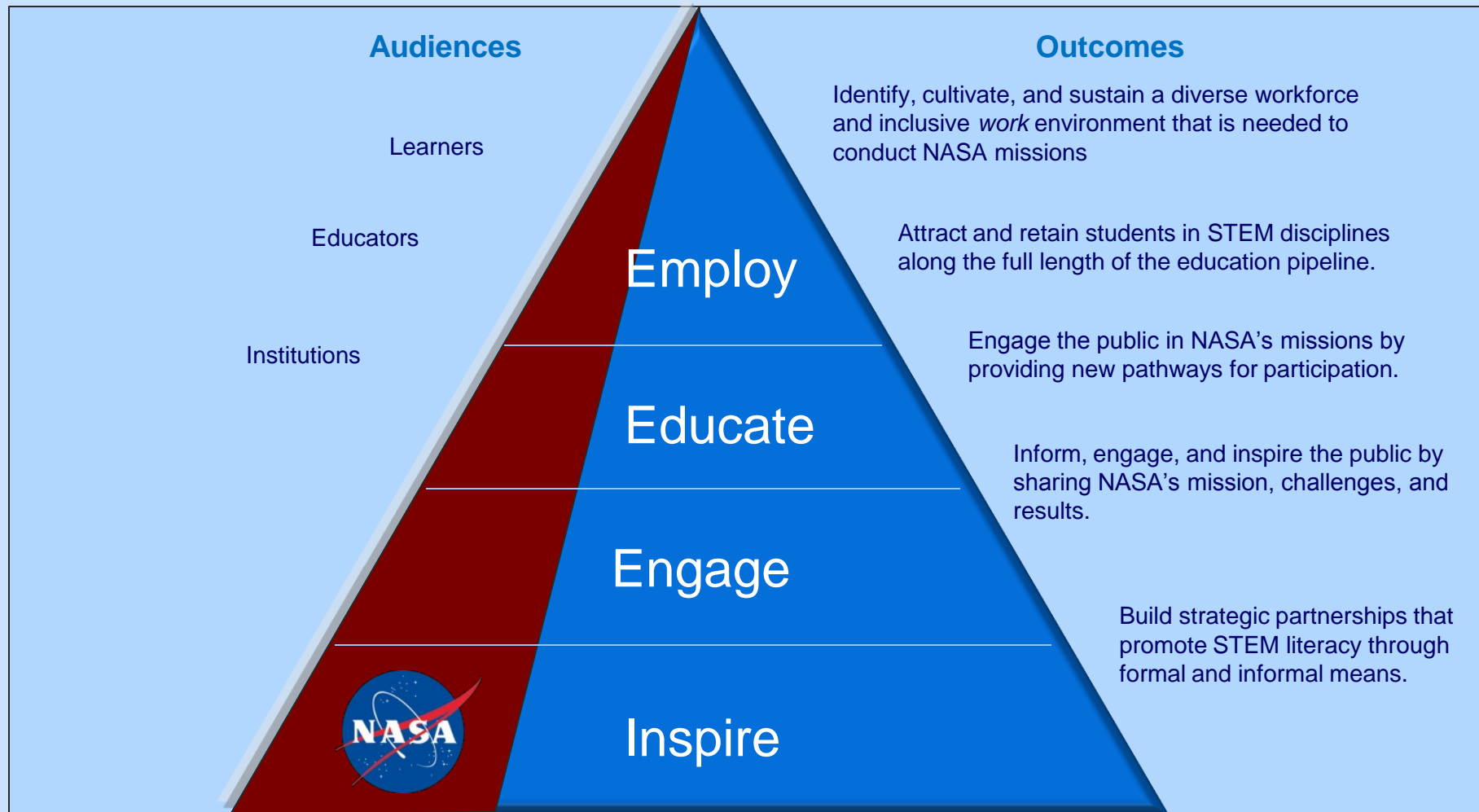
NASA Education Vision Statement

To advance **high quality** Science, Technology, Engineering, and Mathematics **(STEM) education** using **NASA's unique** capabilities





STEM Education Framework



Operating Principles

Relevance • NASA Content • Diversity • Evaluation • Continuity • Partnership/Sustainability



Statutory Requirements for STEM Education

National Science and Technology Council (NSTC) Committee on STEM Education (CoSTEM) was established pursuant to the requirements of Sec. 101 of the America COMPETES Reauthorization Act of 2010.

- It requires NASA to actively engage in collaborations with other federal agencies to ensure the Agency's programs are supportive of national STEM priorities.
- The CoSTEM will serve as part of the internal deliberative process of the NSTC and provides overall guidance and direction. The purpose of the CoSTEM is to coordinate Federal programs and activities in support of STEM education.
- In accordance with the Act, CoSTEM is currently reviewing STEM education activities and programs, and the respective assessments of each, throughout Federal agencies to ensure effectiveness; coordinating, with the Office of Management and Budget, STEM education activities and programs throughout Federal agencies; and will develop and implement through the participating agencies a 5-year STEM education strategic plan, to be updated every 5 years.

Description of 5-year Federal STEM Education Strategic Plan

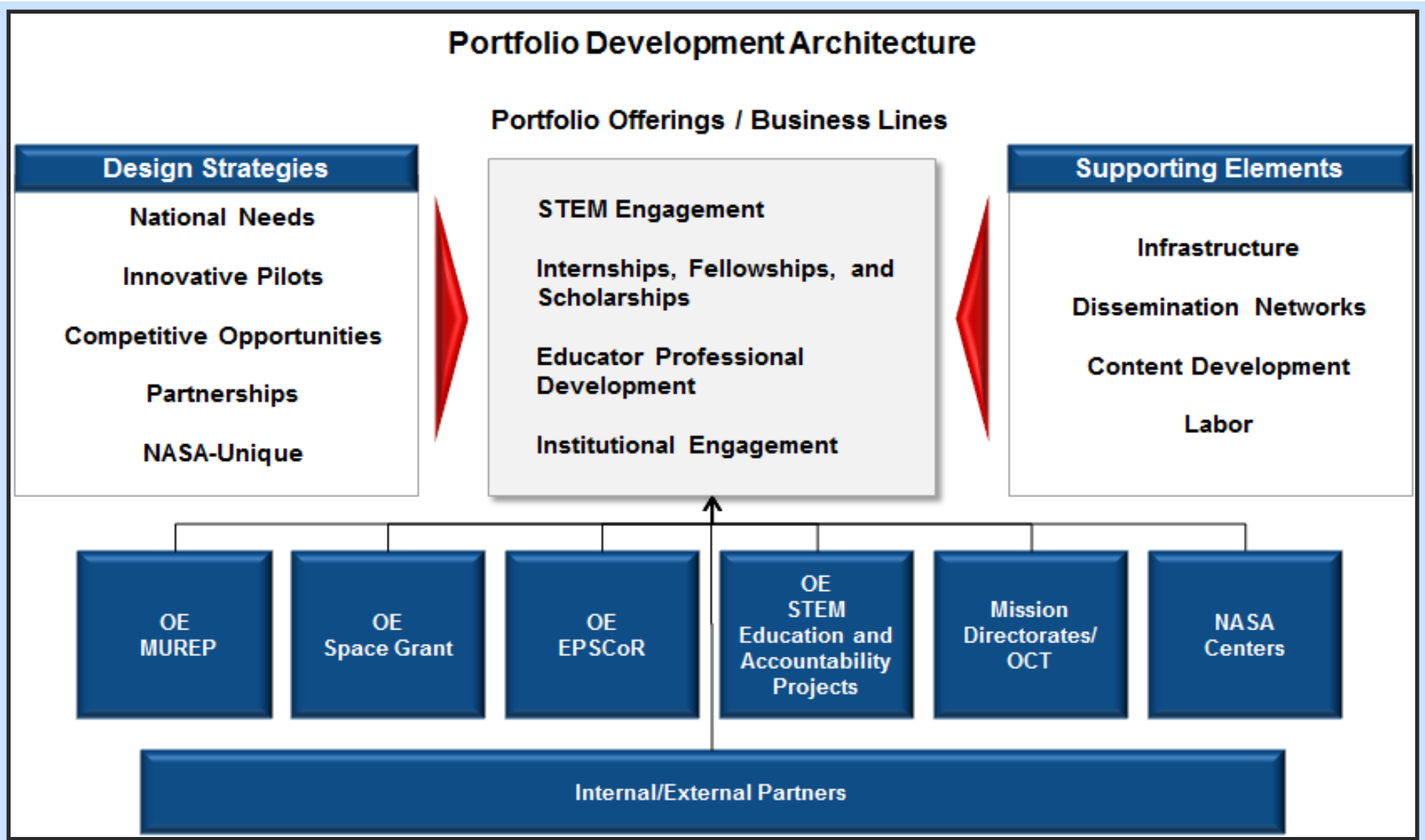


The Strategic Plan will provide common goals, outcomes, and strategies to create a coordinated portfolio of STEM education across the Federal government. It requires Federal agencies to design and revise their STEM education investments to accomplish the following objectives:

- 1. Do What We Know Works**
- 2. Learn More About and Share What Works**
- 3. Increase Efficiency and Cohesion**
- 4. Identify and Focus on Priority Issues**
 - Effective K-12 STEM Teacher Education
 - Engagement in STEM
 - Undergraduate STEM Education
 - Serving Groups Traditionally Underrepresented in STEM

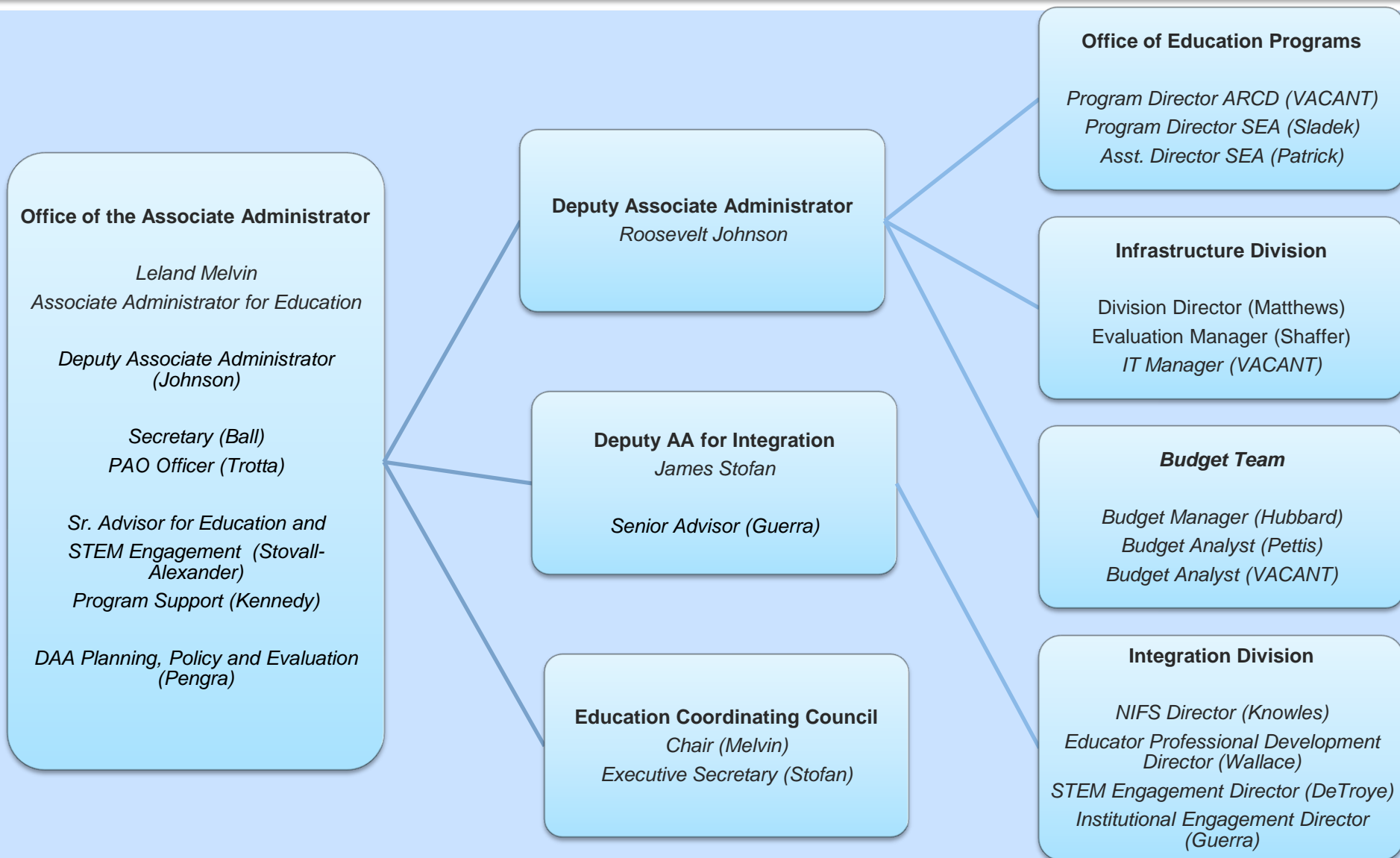


FY 2014 Agency's Design Strategies & Funding Sources

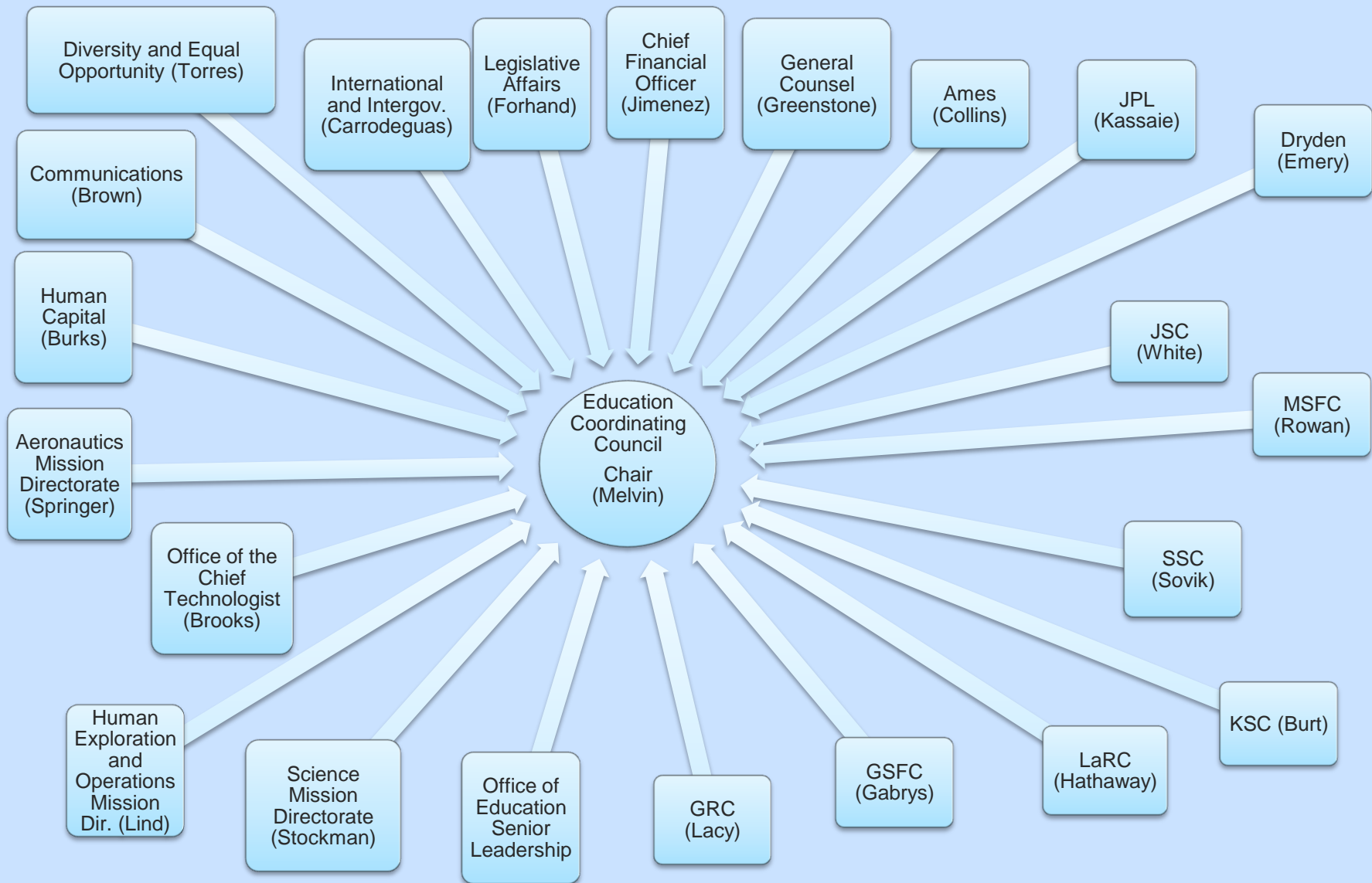




Education Functional Leadership



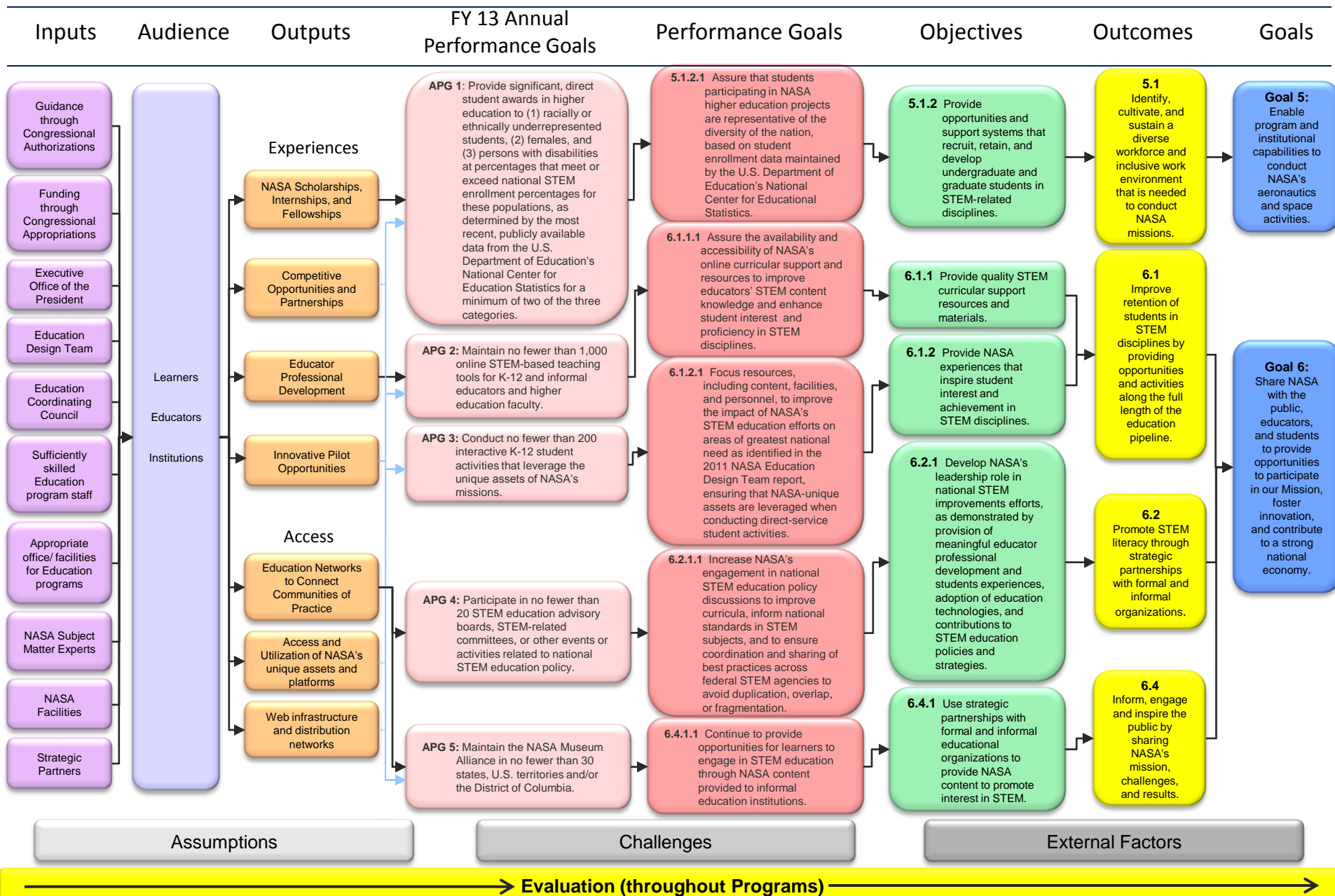
Education Coordinating Council





NASA Education - Model

Vision: To advance high quality Science, Technology, Engineering and Mathematics (STEM) education using NASA's unique capabilities.





FY2014 Strategic Goals and Outcomes for Education

Strategic Goal 5: Enable program and institutional capabilities to conduct NASA's aeronautics and space activities.

- Outcome 5.1: Identify, cultivate, and sustain a diverse workforce and inclusive work environment that is needed to conduct NASA missions.

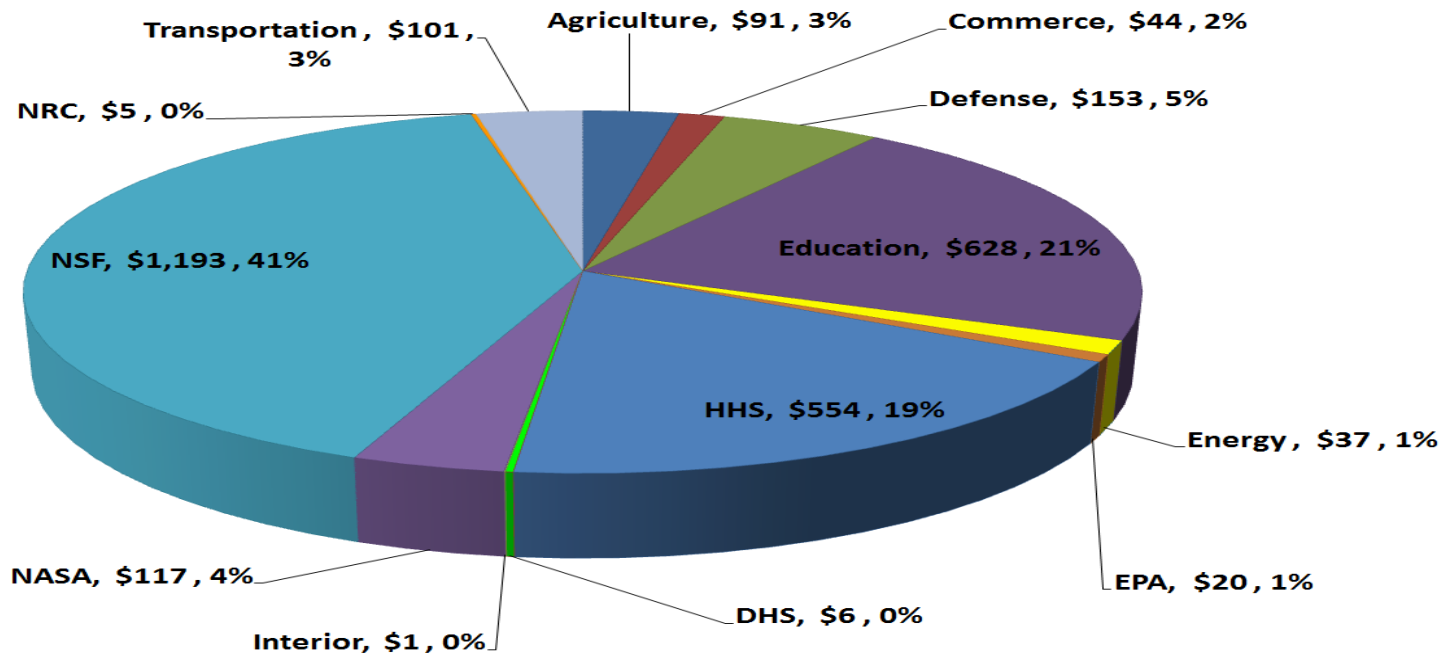
Strategic Goal 6: Share NASA with the public, educators, and students to provide opportunities to participate in our Mission, foster innovation, and contribute to a strong national economy.

- Outcome 6.1: Improve retention of students in STEM disciplines by providing opportunities and activities along the full length of the education pipeline.
- Outcome 6.2 Promote STEM literacy through strategic partnerships with formal and informal organizations.
- Outcome 6.4: Inform, engage, and inspire the public by sharing NASA's missions, challenges, and results.



FY 2013 Federal Investments in STEM Education

Federal STEM Education Investments by Agency (\$2,951 M)



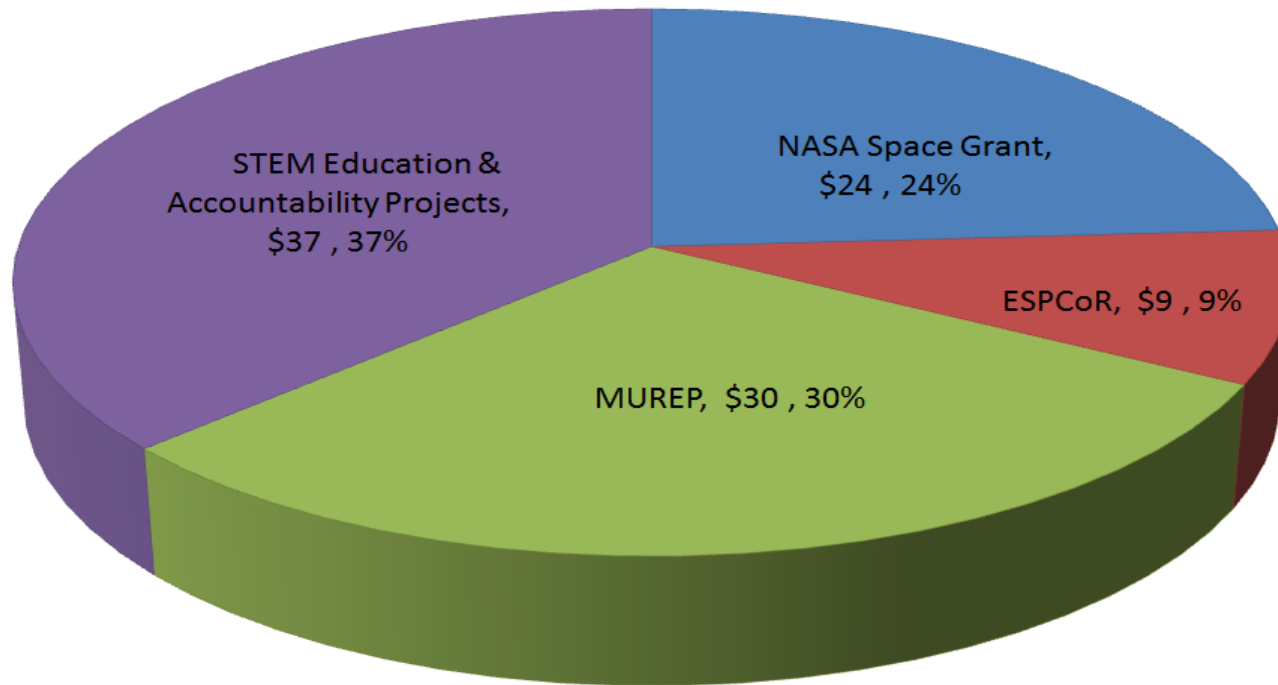
209 investments
13 agencies

*Source: Executive Office of the President, Office of Science and Technology Policy, *Preparing a 21st Century Workforce : Science, Technology, Engineering, and Mathematics Education in the 2013 Budget* (Feb 2012)



NASA Education FY 2014 STEM Total Investments

FY 2014 NASA Office of Education Funding by Source

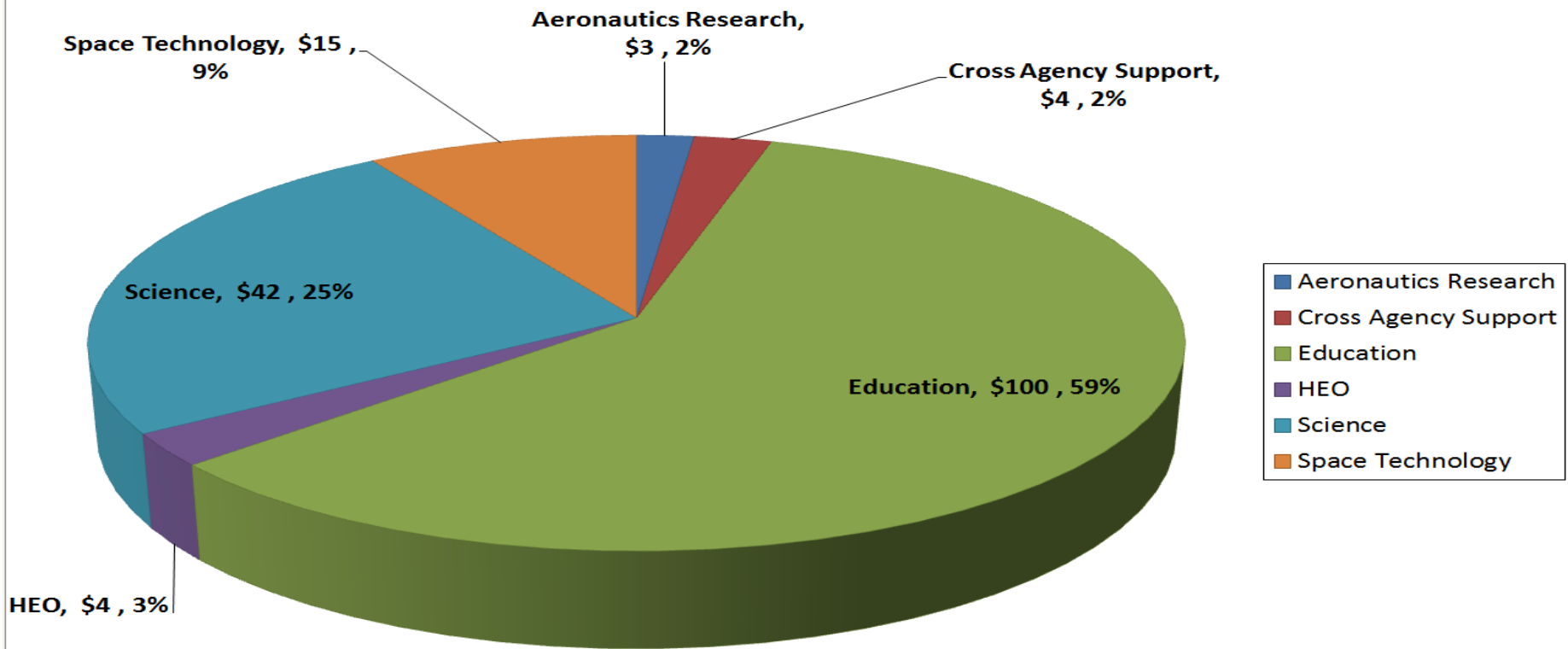


Total Investments - \$100M



Agency FY 2014 STEM Education Total Investments

FY 2014 NASA Education Funding by Source

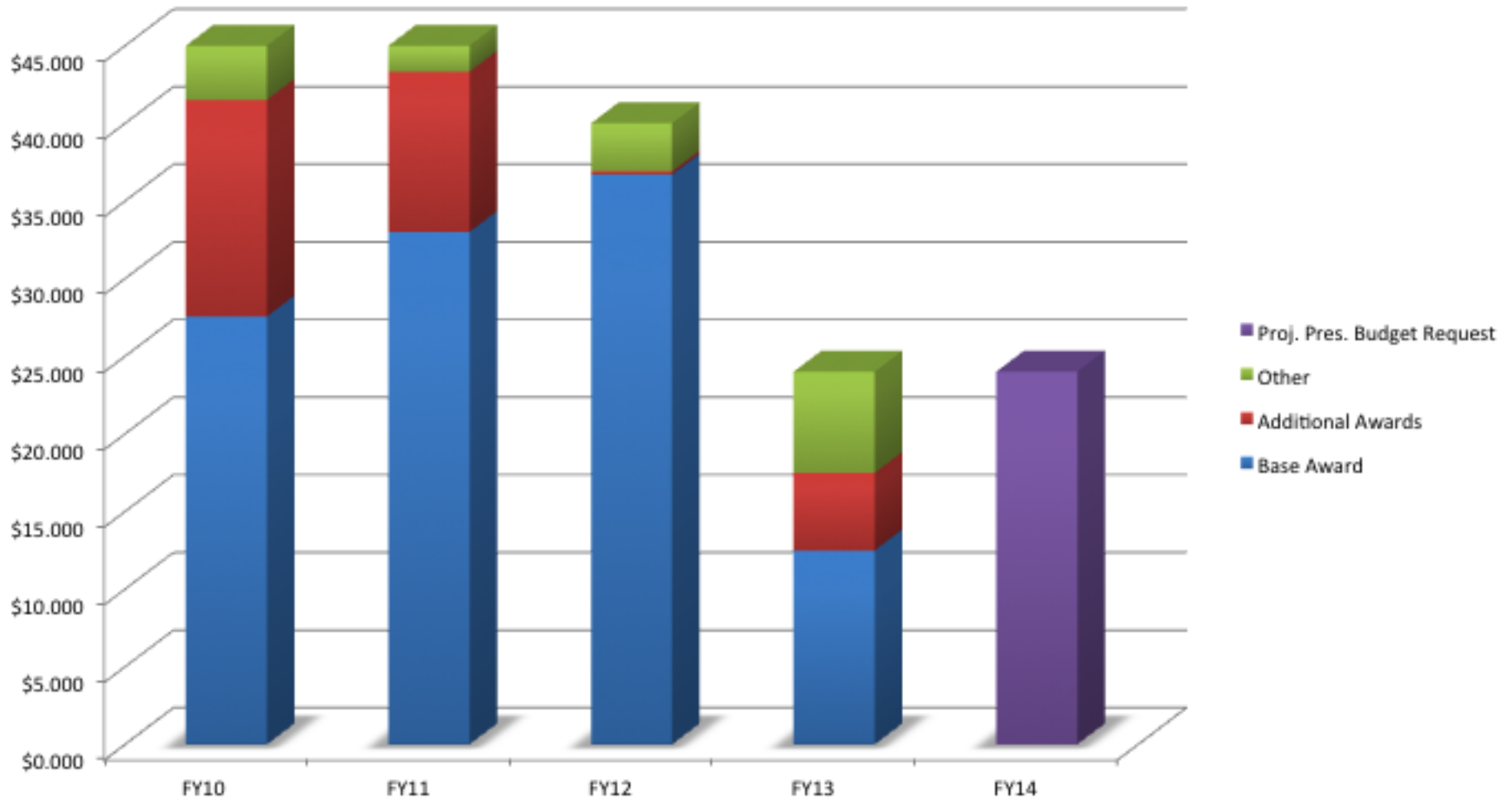


Agency Total Investments - \$169M

Space Grant Funding 2010-2014



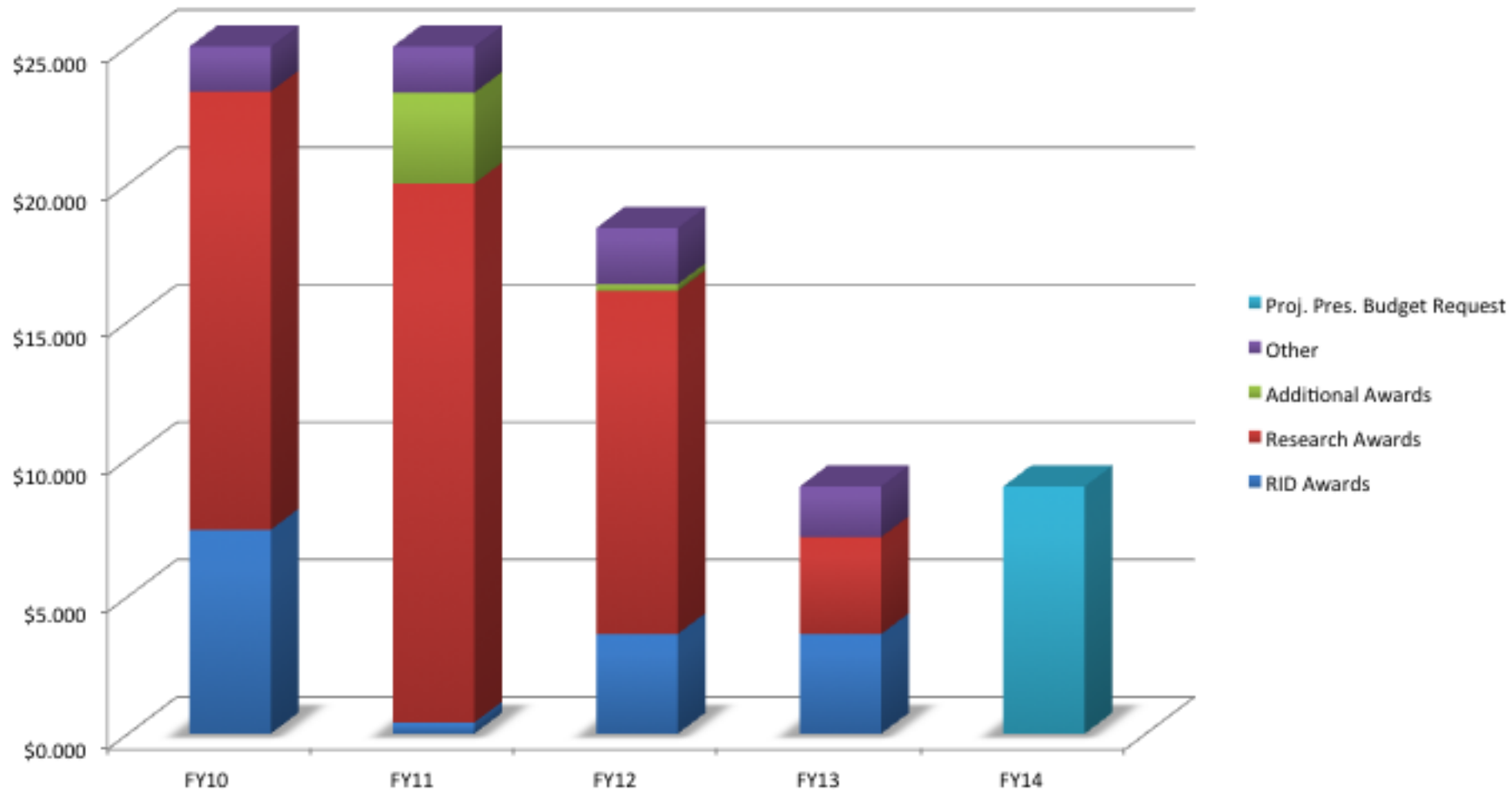
Space Grant Funding 2010-2014



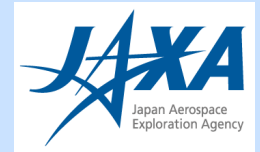
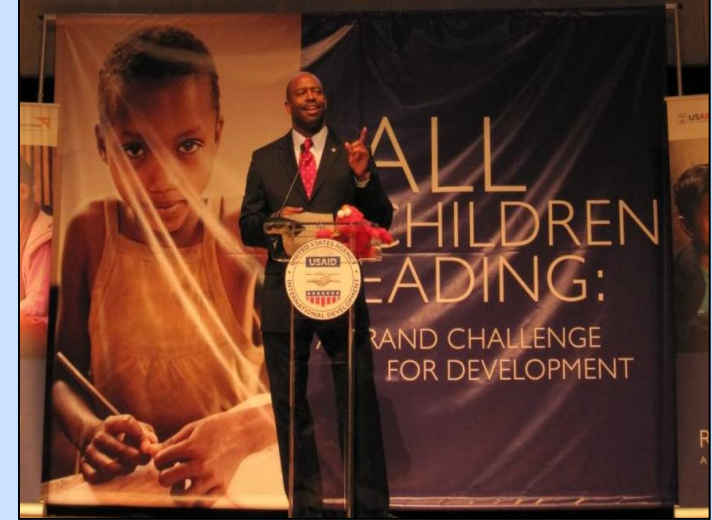
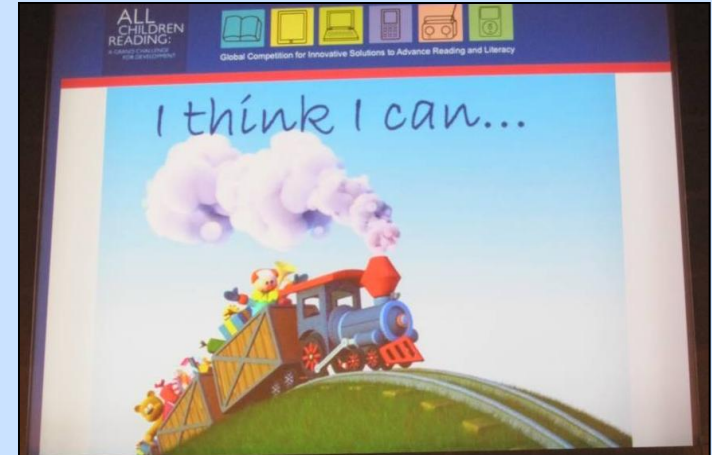
EPSCoR Funding 2010-2014

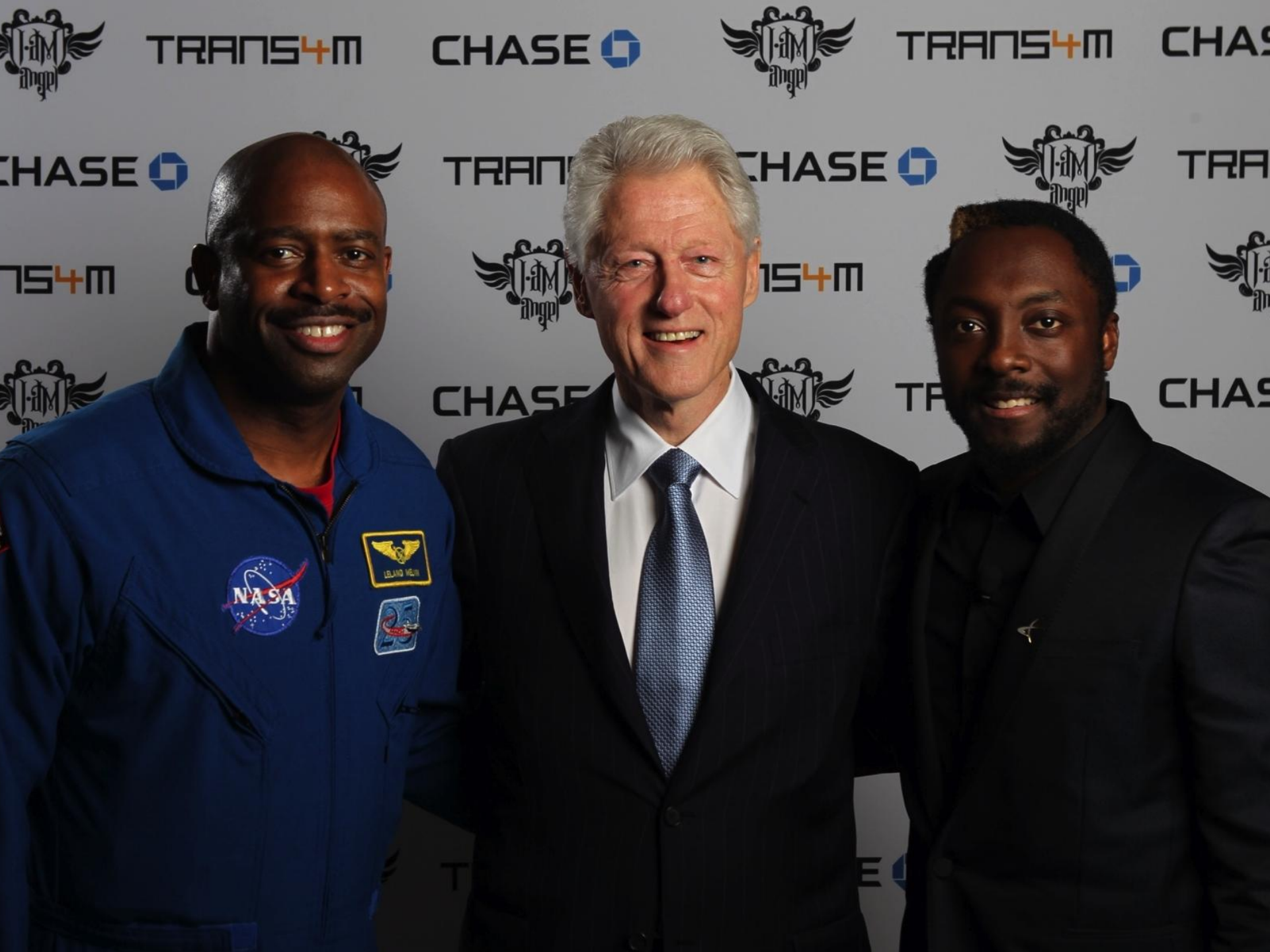


EPSCoR Funding 2010-2014



NASA's STEM Partnerships are Reaching Learners, Educators and Institutions





iamFIRST.com

 science



ISS- A Focal Point for STEM Education



ISS Downlinks



Youtube Space Lab



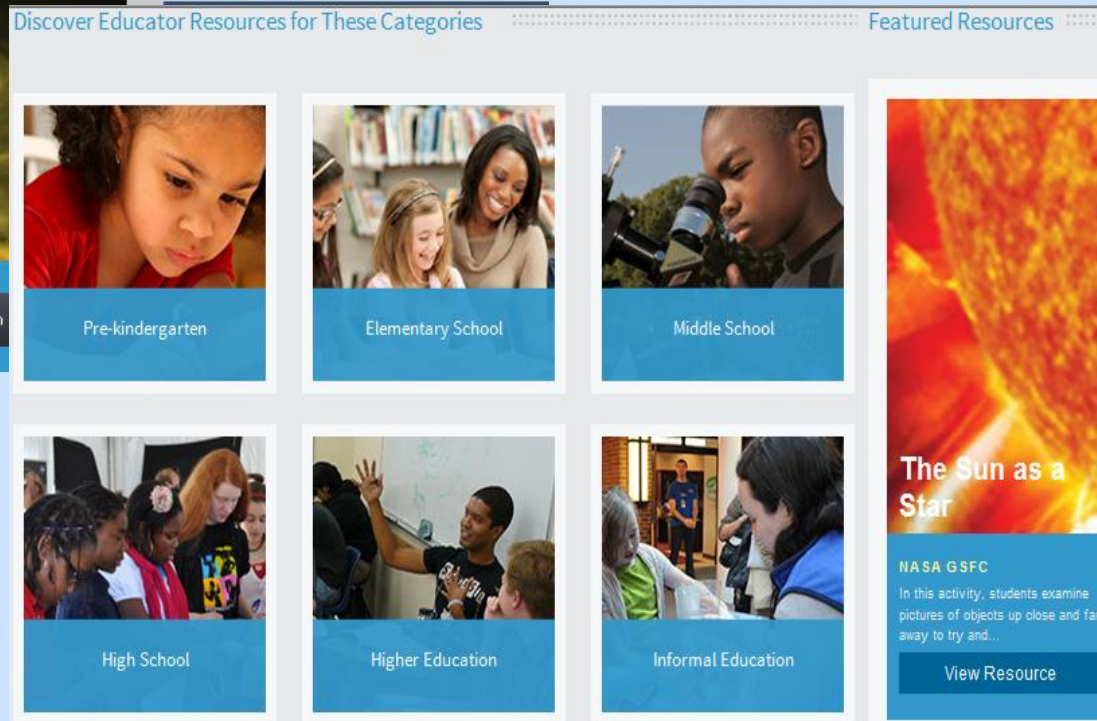
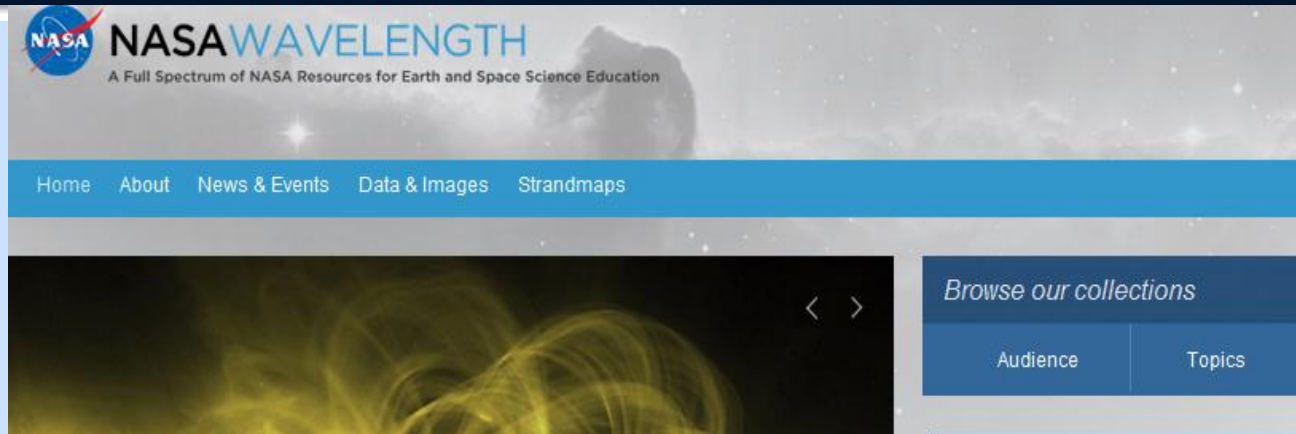
LEGO



SPHERES



NASA Wavelength for Space Educators



<http://nasawavelength.org/>

James Webb STEM Innovation Project




Students adding supports for secondary mirror

Real World Games: Sector33 App



- Free, downloadable app version of Smart Skies
- Players become air traffic controllers
- Available for iPods/iPads and Droid

 Store Mac iPod iPhone iPad iTunes Support


iTunes Preview

What's New What is iTunes What's on iTunes iTunes Charts How To

Sector 33

By NASA Ames Research Center

Open iTunes to buy and download apps.



[View In iTunes](#)

+ This app is designed for both iPhone and iPad

Free

Category: Games
Released: Jan 30, 2012
Version: 1.01
Size: 12.4 MB
Language: English
Seller: NASA Ames Research Center
© Copyright 2011, NASA, All Rights Reserved
[Rated 4+](#)

Requirements: Compatible with iPhone, iPod touch, and iPad. Requires iOS 4.1 or later.

[View More By This Developer](#)

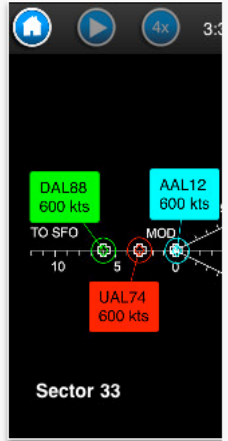
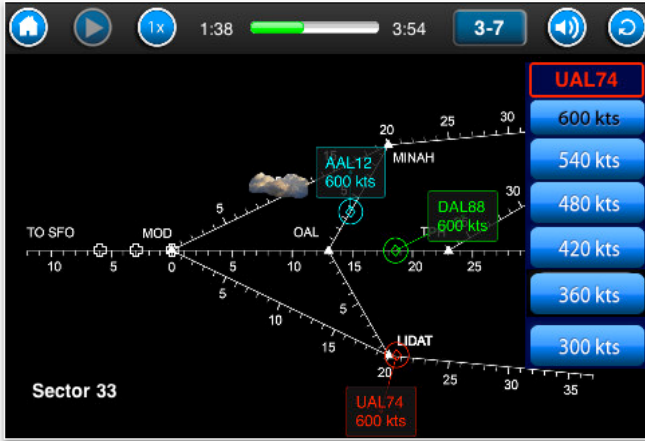
Description

It's a stormy Friday evening in Northern California as the evening rush of air traffic fast approaches the San Francisco Bay Area. All the flights going to San Francisco airport from the east pass through "Sector 33" – YOUR Sector of the airspace.

[NASA Ames Research Center Web Site](#) [Sector 33 Support](#) [Application License Agreement](#) [...More](#)

Screenshots

iPhone | iPad



Hubble Image Processors Group



facebook

Search

Christine Find F

Hubble Image Processors Timeline Now Highlights

✓ Liked

Hubble Image Processors
133 likes · 29 talking about this

Community
Amateur astronomical image processors meet here to exchange information, tips and techniques, and share their work. Ask a question, post a picture, and let everyone know how your projects are coming along.

About

Photos Likes Videos

Highlights

Status Photo Ask Question Milestone

Write something...

Hubble Image Processors
March 27

Coming Soon: AstroDrizzle
A new technique allows astronomers to make Hubble's images sharper than ever. This animation provides a look at turning raw data into a deep composite image.

Recent Posts by Others on Hubble Image Processors

Nick Rose
I couldn't find this in the FAQ's area. What is the differ...
19 hours ago

Joshua Barrington
I was advised to post technical questions here. Hop...
1 · Friday at 7:59am

André Van Der Hoeven
This image was created from Hubble data in the leg...

Help us find Hubble's next iconic picture.

Enter
**HUBBLE'S
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TREASURES**

www.spacetelescope.org/
hiddentreasures

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HUBBLE SITE

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gallery

Hubble Image Processors

On this page:

- Hubble's Hidden Treasures
- Processing Hubble Images
- Data Archives
- Image Processing Tools

Amateur astronomical image processors gather here to exchange information and advice, and share their work. Professional Hubble processors also have the opportunity to answer questions and share their thoughts. Post a picture, ask a question, and enjoy the discussion.

Processing Hubble Images

Hubble images from archival data take skill, care, and technical know-how. Processors must be familiar with image processing software, and a basic understanding of Hubble instruments and data is essential. This page provides a guide to the tools and techniques used by Hubble image processors.

Creating a Hubble Galaxy in Two Minutes

Hubble images are made, not born. Images must be woven together from the incoming data from the camera, cleaned up and given colors that bring out features that eyes would otherwise miss. In this video, a Hubble image gallery comes together on the screen at super-fast speed.

Data Archives

Hubble Legacy Archive

The Hubble Legacy Archive (HLA) is designed to optimize science from the Hubble Space Telescope by providing Hubble data online, enhanced Hubble products, and advanced viewing capabilities. The HLA is a joint project of the Space Telescope Science Institute (STScI), the Space Telescope European Coordinating Facility, and the Canadian Astronomy Data Centre.

Image Processing Tools

HLA PhotoShop FITS Liberator

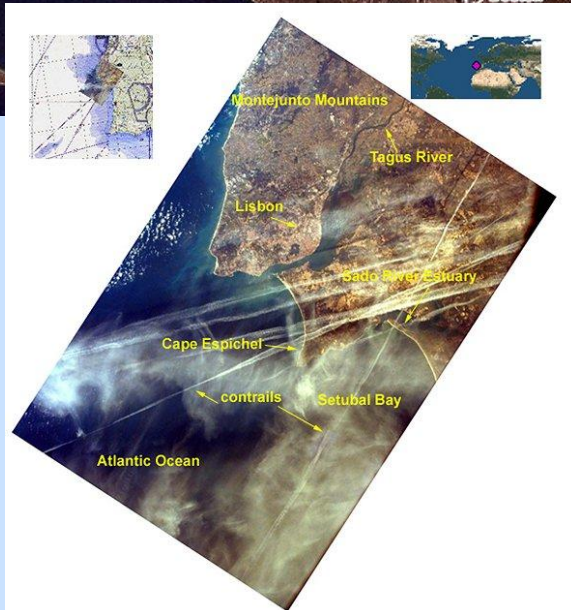
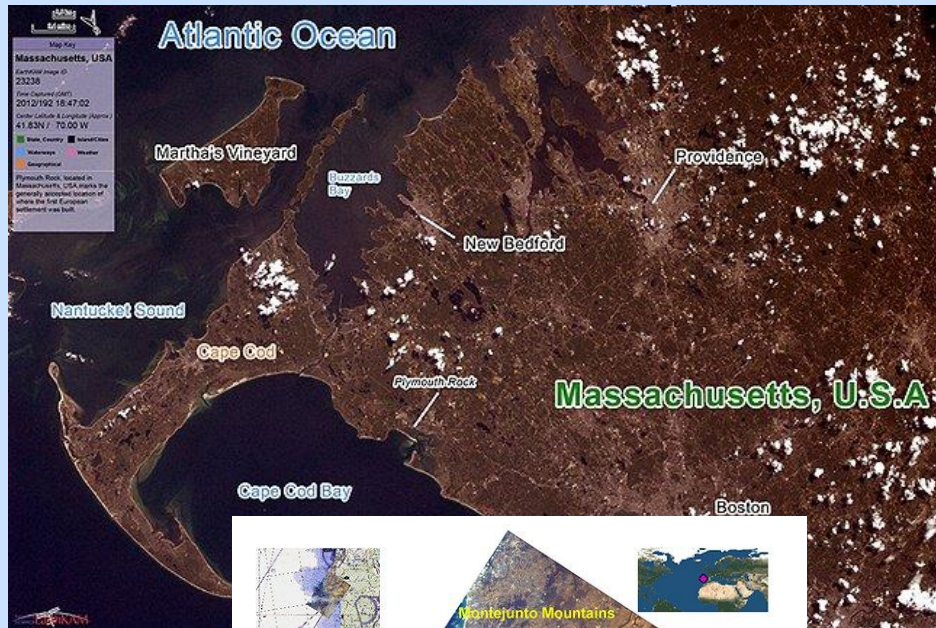
The ESA/ESO/NASA Photoshop FITS Liberator is a free Adobe Photoshop plugin that makes it possible to view astronomical science data in the FITS format. It is a joint project of the Space Telescope Science Institute (STScI), the Space Telescope European Coordinating Facility, and the Canadian Astronomy Data Centre.

Other Resources

A Brief Introduction to Astronomical Image Processing (October 2004, European Space Agency)

A Step-by-Step Guide to Making Your Own Images (October 2004, European Space Agency)

Record Number of Students Control the Space Station Camera- EarthKAM





Educator Teams Fly on NASA's SOFIA Airborne Observatory



The first four Airborne Astronomy Ambassador (AAA) educators: (from left) Constance Gartner, Vince Washington, Ira Hardin and Chelen Johnson at the educators' work station aboard the SOFIA observatory during a flight on the night of Feb. 12-13, 2013.



Stratospheric Observatory for Infrared Astronomy (SOFIA)



Citizen explorers address global challenges...

A background image of the Earth as seen from space, showing the curvature of the planet and various landmasses and clouds.

INTERNATIONAL SPACE APPS CHALLENGE

T-45 Days and Counting

The International Space Apps Challenge is a two-day technology development event during which citizens from around the world will work together to address current challenges relevant to both space exploration and social need.

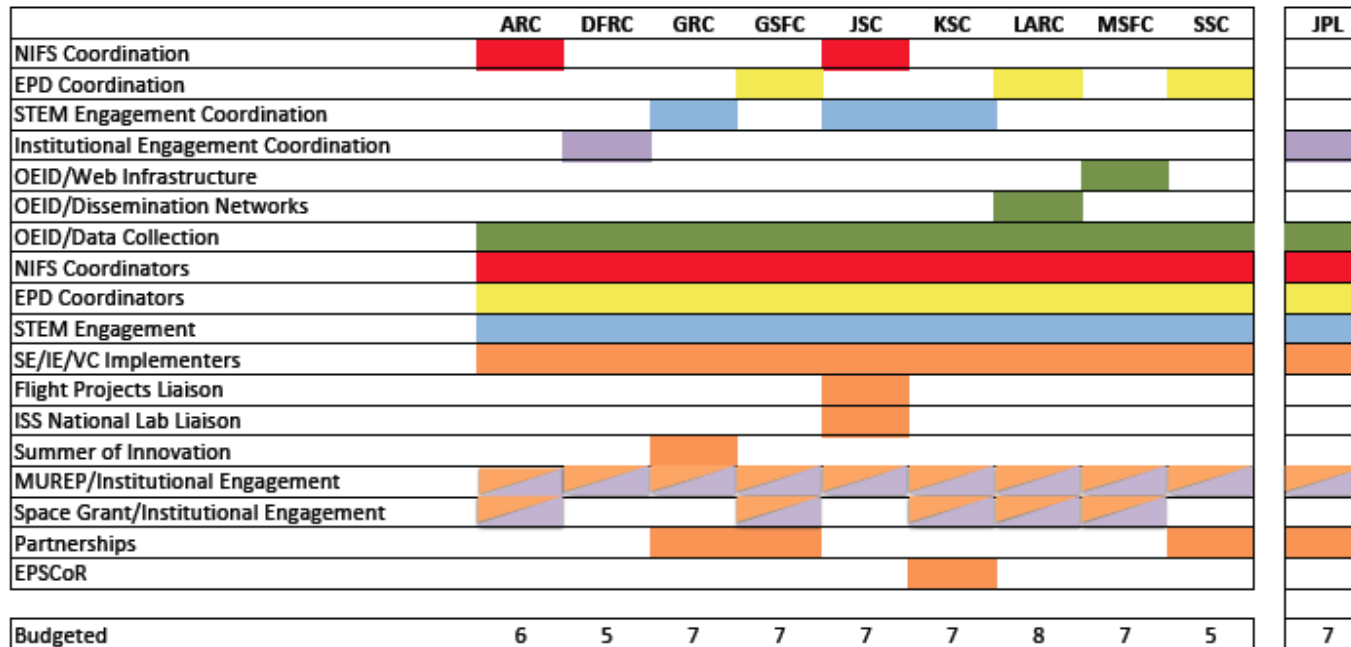
NASA believes that mass collaboration is key to creating and discovering state-of-the-art technology. The International Space Apps Challenge aims to engage YOU in developing innovative solutions to our toughest challenges.

Join us on April 20-21, 2013, as we join together cities around the world to be part of pioneering the future. [Sign up](#) to be notified when registration opens in early 2013!



Line of Business Responsibilities

Roadmap Assignments



Accountable to:
NIFS Director
EPD Director
OEID Director
Office of Education Funding Mgrs
STEM Engagement Director
Institutional Engagement Director

Agency FY2011-18 STEM Education Total Investments

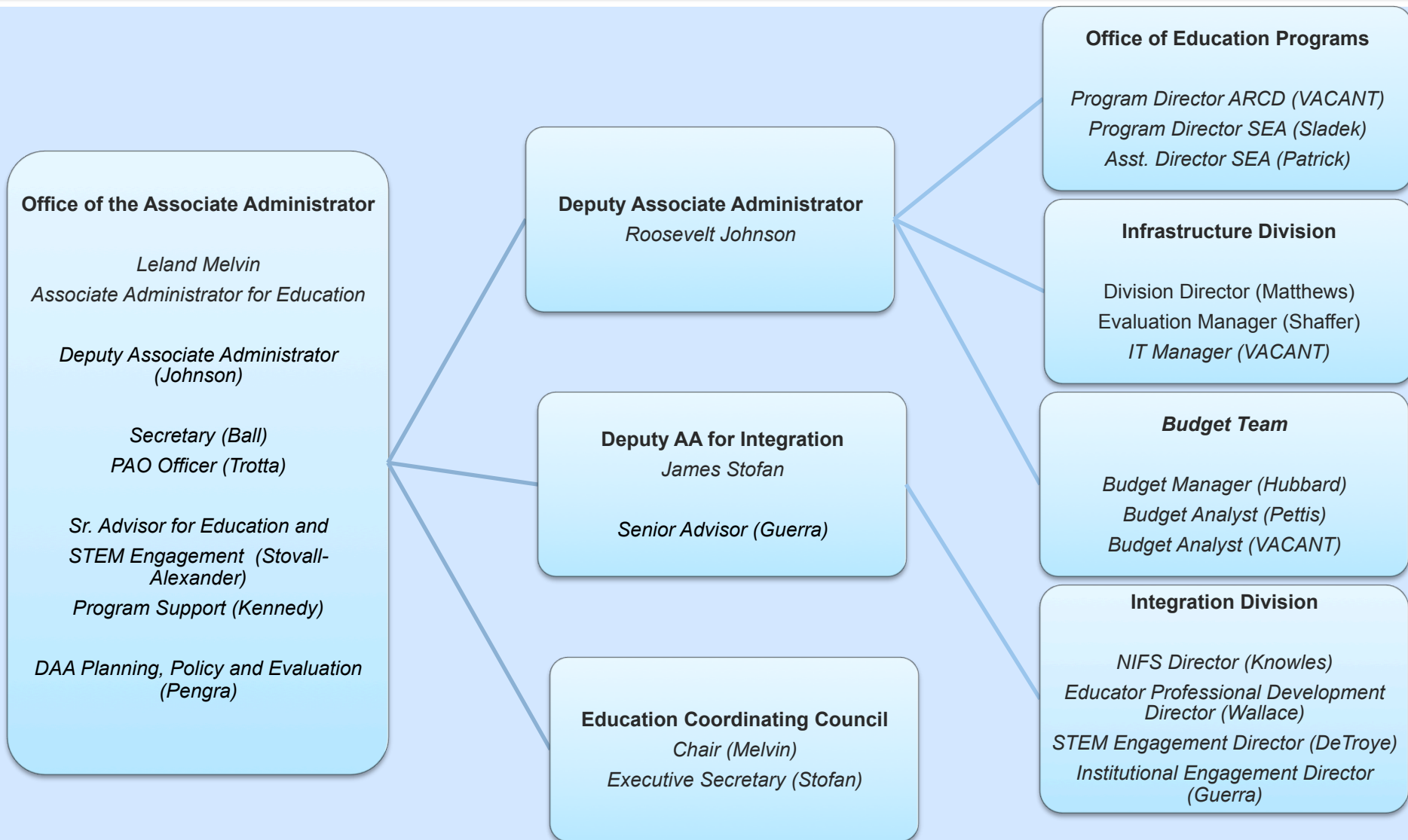


NASA STEM EDUCATION INVENTORY FUNDING, BY ACCOUNT

	Actual	Estimate		Notional				
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
\$ in Millions								
Total	189.1	202.5	167.9	169.4	169.5	166.7	163.1	161.7
Science	29.9	41.9	40.8	42.2	42.4	39.7	36.2	34.8
Aeronautics Research	4.4	3.3	3.2	3.2	3.2	3.2	3.2	3.2
Space Technology		10.4	15.2	15.2	15.2	15.2	15.2	15.2
Exploration	4.2	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Space Operations	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Education	143.1	138.4	100.0	100.0	100.0	100.0	100.0	100.0
Aerospace Research and Career Development	68.3	58.4	33.0	33.0	33.0	33.0	33.0	33.0
<i>NASA Space Grant</i>	44.5	40.0	24.0	24.0	24.0	24.0	24.0	24.0
<i>ESPCoR</i>	23.9	18.4	9.0	9.0	9.0	9.0	9.0	9.0
STEM Education and Accountability	74.8	80.0	67.0	67.0	67.0	67.0	67.0	67.0
<i>MUREP</i>	28.5	30.0	30.0	30.0	30.0	30.0	30.0	30.0
<i>STEM Education and Accountability Projects</i>	46.3	50.0	37.0	37.0	37.0	37.0	37.0	37.0
<i>Formal and Informal Education</i>	31.6	21.0						
<i>Innovation in Education</i>	10.0	10.0						
<i>Evaluation, Performance, Monitoring, & Accountability</i>	4.7	9.0						
<i>Informal STEM Education</i>	0.0	10.0						
Cross Agency Support	5.0	4.1	4.2	4.4	4.3	4.2	4.1	4.1

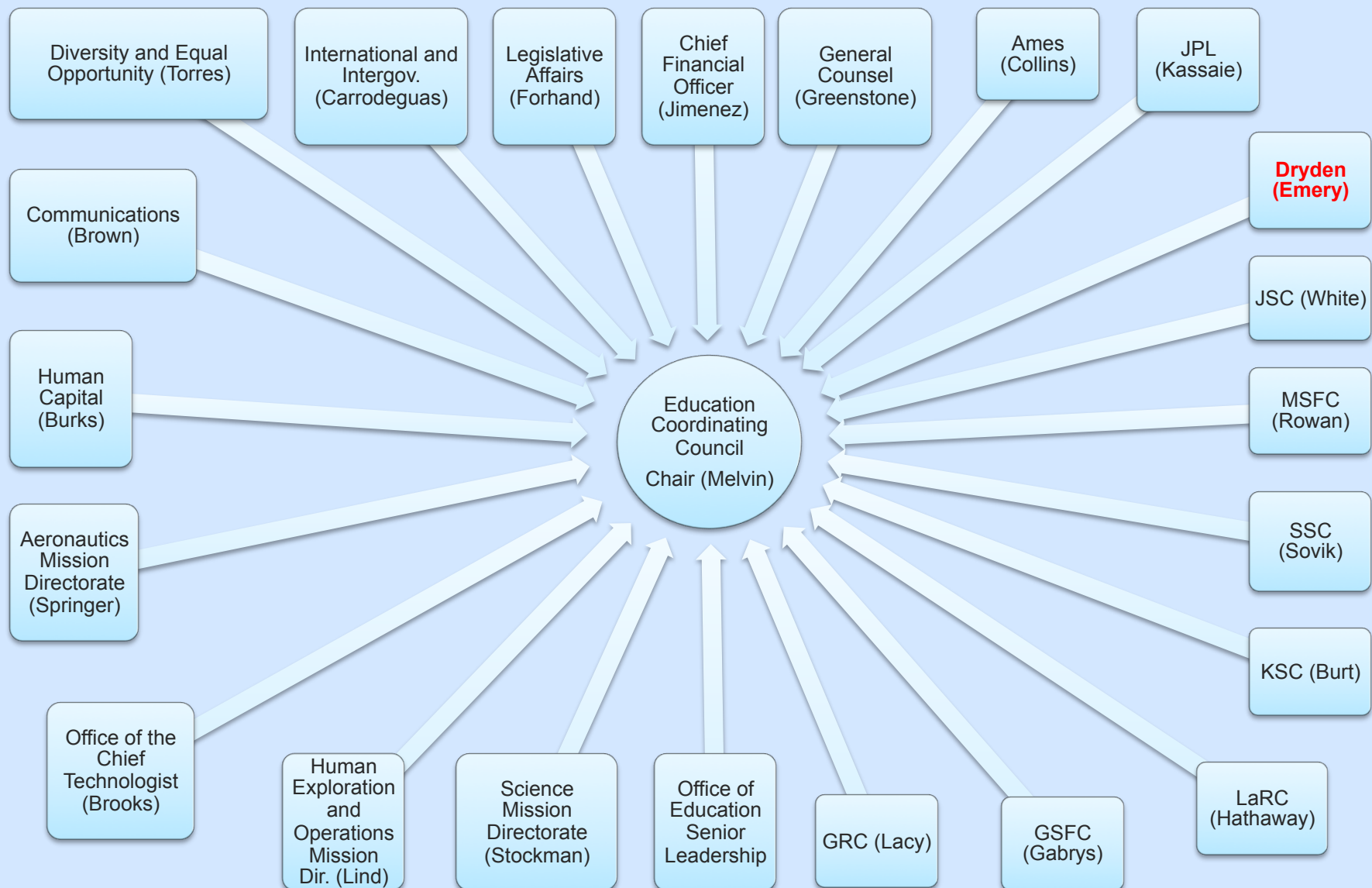


Education Functional Leadership



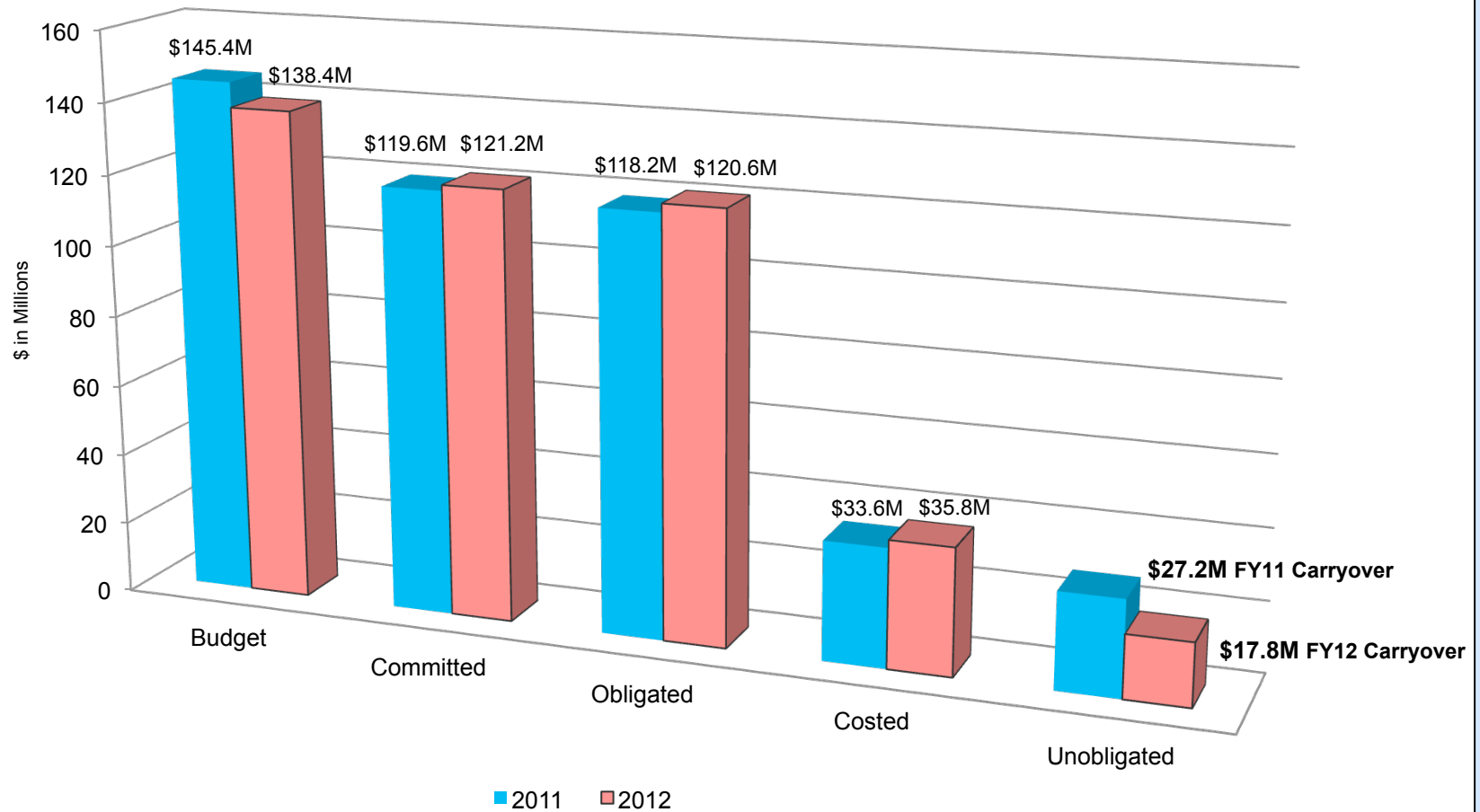


Education Coordinating Council





FY2011 vs. FY 2012 Year End Comparison

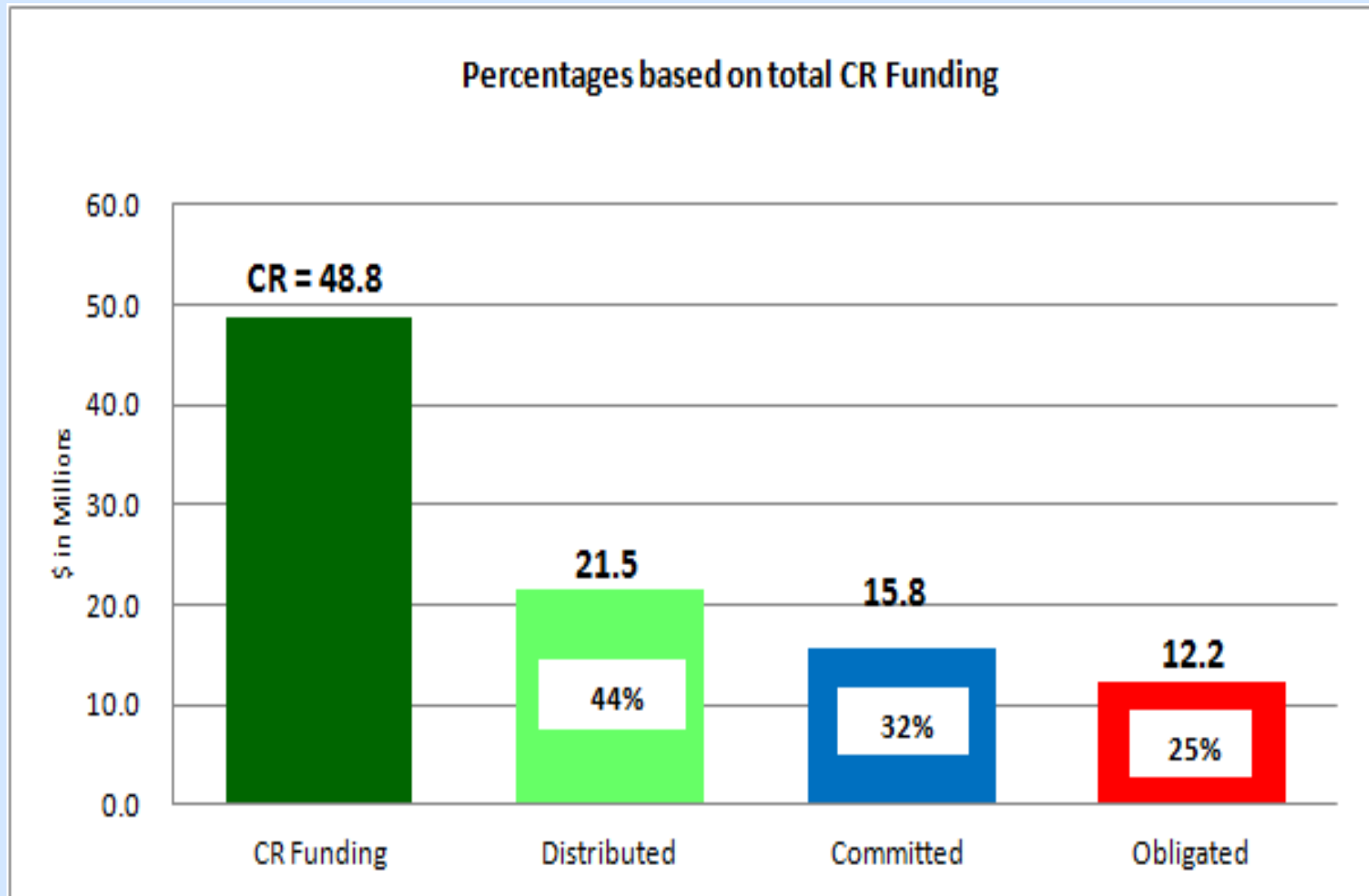


FY 2013 CR Budget Control Level



\$ in Thousands	
Education	\$ 48,770,000
Aerospace Research & Career Development Program	\$ 16,094,100
Space Grant College and Fellowship Project	\$ 11,704,800
Experimental Program to Stimulate Competitive Research (EPSCoR)	\$ 4,389,300
STEM Education and Accountability Program	\$ 32,675,900
STEM Education and Accountability Project	\$ 18,044,899
Formal & Informal Education	\$ 7,006,789
Innovation in Education	\$ 3,133,958
Evaluation, Performance Monitoring and Accountability	\$ 5,465,653
Informal STEM Education	\$ 2,438,499
Minority University Research & Education Project (MUREP)	\$ 14,631,001

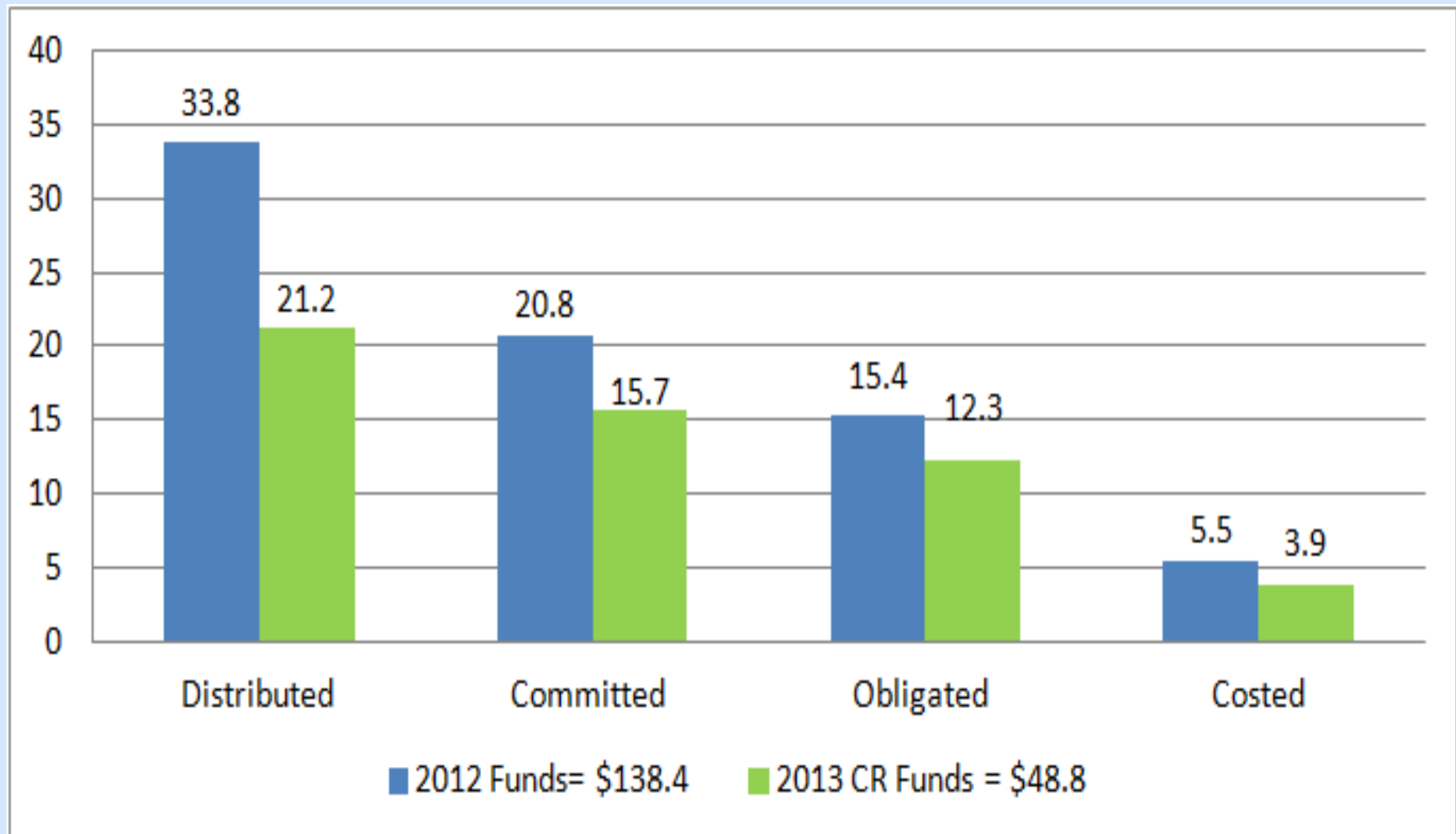
FY 2013 CR Funding Status



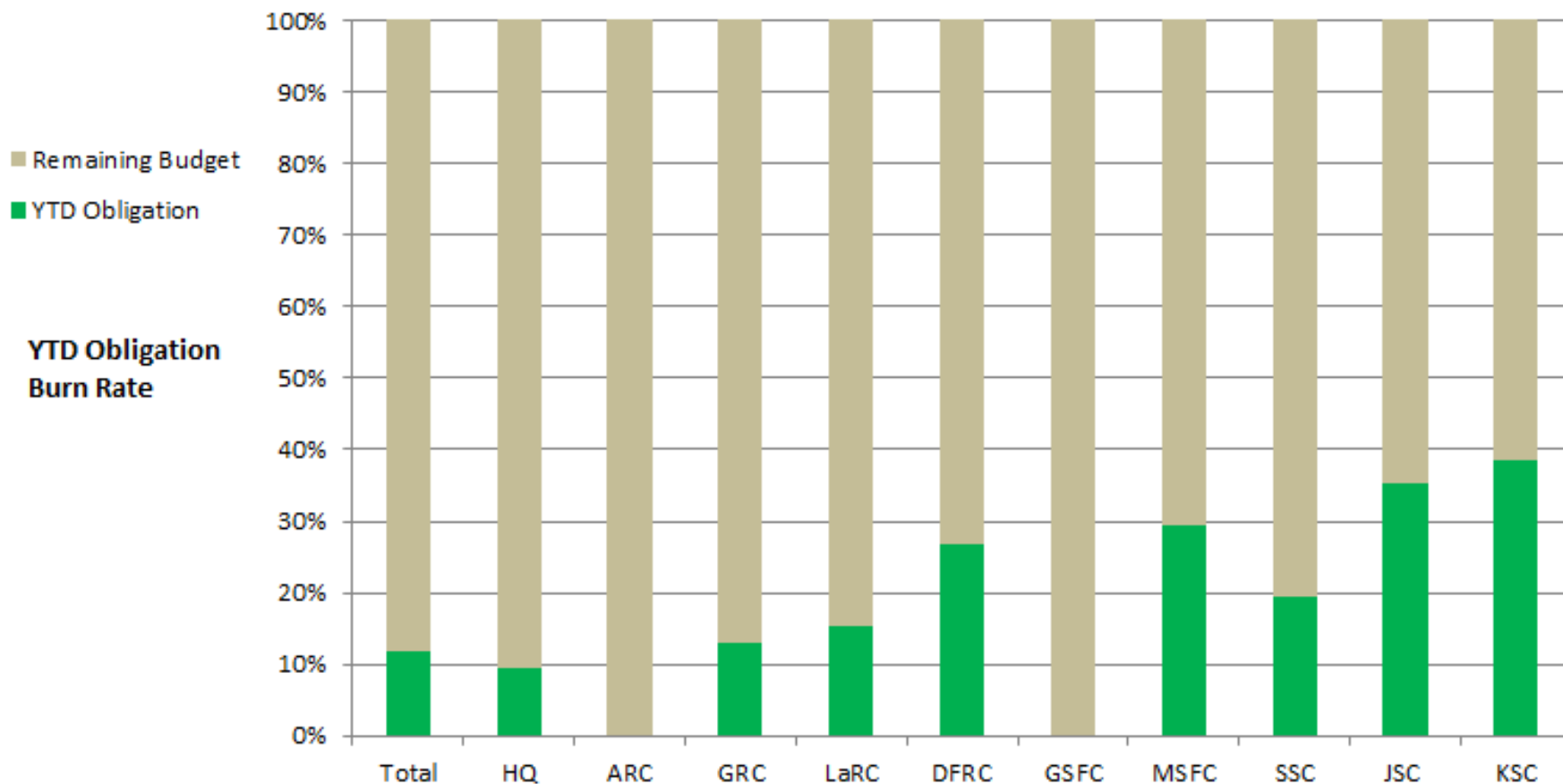
Funding Status Comparison FY2012 vs. FY2013 Oct-Jan



\$ in Millions



FY13 Office of Education Travel Budget



	Total	HQ	ARC	GRC	LaRC	DFRC	GSFC	MSFC	SSC	JSC	KSC
Control	\$ 699,000	\$ 519,000	\$ 18,000	\$ 36,000	\$ 18,000	\$ 18,000	\$ 18,000	\$ 18,000	\$ 18,000	\$ 18,000	\$ 18,000
YTD Obligation	\$ 83,300	\$ 49,010	\$ -	\$ 4,640	\$ 2,780	\$ 4,800	\$ -	\$ 5,300	\$ 3,480	\$ 6,370	\$ 6,920
% Obligated	11.9%	9.4%	0.0%	12.9%	15.4%	26.7%	0.0%	29.4%	19.3%	35.4%	38.4%
Remaining Budget	\$ 615,700	\$ 469,990	\$ 18,000	\$ 31,360	\$ 15,220	\$ 13,200	\$ 18,000	\$ 12,700	\$ 14,520	\$ 11,630	\$ 11,080